ABSTRACT OF THE DISCLOSURE

Apparatus and methods for measuring oil flow velocity in a well are provided which utilize fluorescence quenching. A marker which quenches the natural fluorescence of crude oil is chosen and injected into the oil flow at a first location. At a second location, the oil flow is subjected to light at a wavelength which will cause oil to naturally fluoresce. The fluorescence signal is detected at the second location by a sensing probe. The time that it takes for the quenching marker to move from the first location to the second location is measured by sensing a decrease in fluorescence due to the quencher. Fluid velocity is determined by dividing the distance between the marker-ejection point and the optical probe position by the time it took the marker to move that distance.